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ABSTRACT

The Teaching Behaviors Questionnaire (TBQ) was developed to inventory attitudes regarding research-based effective teaching behaviors. A ranking format was pilot tested before the final version, a Likert-type scale, was adopted. The final version of the instrument was pilot tested and used in two studies. A sample (N=500) containing teachers, principals, college eduction faculty members, and undergraduate education students displayed a normal distribution, and yielded an alpha of .76. Significant differences were established in both studies using the instrument. The instrument holds promise as the basis for further research, as well as a tool for program development for pre- and post-service teachers. The TBQ could provide teachers and student teachers with insight concerning their beliefs regarding effective teacher behaviors. With some caution the instrument could contribute to selection and screening efforts for teacher and principal candidates. A list of research-based "teacher should" statements as well examples of items from a ranking version and the final version of the TBQ are included as well as 23 references. (Author)

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The Development and Uses of the Teaching Behaviors Questionnaire

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Abstract

The development and uses of the
Teaching Behaviors Questionnaire

Gregory J. Marchant and Norman D. Bowers

The Teaching Behaviors Questionnaire (TBQ) was developed to inventory attitudes regarding research-based effective teaching behaviors. A ranking format was pilot tested before the final version, a Likert-type scale, was adopted. The final version of the instrument was pilot tested and used in two studies. A sample (N=500) containing teachers, principals, college education faculty members, and undergraduate education students displayed a normal distribution, and yielded an alpha of .76. Significant differences were established in both studies using the instrument. The instrument holds promise as the basis for further research, as well as a tool for program development for pre- and post-service teachers. The TBQ could provide teachers and student teachers with insight concerning their beliefs regarding effective teaching behaviors. With some caution the instrument could contribute to selection and screening efforts for teacher and principal candidates. A list of research-based "teacher should" statements as well as examples of items from a ranking version and the final version of the TBQ are included.

The Development and Uses of the Teaching Behaviors Questionnaire

This paper reports the development and possible uses of an instrument that inventories attitudes toward research-based effective teaching behaviors. The Teaching Behaviors Questionnaire (TBQ) was designed to produce data that would provide an indication of attitudinal support for the teaching behaviors that research has identified as more effective in producing student achievement. Within the field of education, instruments have been designed to inventory attitudes and opinions concerning topics ranging from teacher-student relationships (e.g. Cook, Leeds, & Callis, 1951) to career ladders (Hart, 1987). Although teacher preferences for models of teaching was once studied (Thompson, 1981), an instrument had not been developed to inventory attitudes toward the effective teaching behaviors identified through research.

A great deal of research has been conducted in an effort to determine which behaviors make some teachers more effective than others in producing student achievement (cf. Brophy & Good, 1986; Cruickshank, 1986; Rosenshine & Stevens, 1986). Early process-product research and correlation studies have been supported by quasi-experimental studies and more recently meta-analysis. The behaviors identified through the research have been summarized and are likely to play an increasing role in policies, programs,

and evaluation procedures that affect teacher education colleges, school administration, teachers, and ultimately students. Inventorying attitudes regarding the research-based effective teaching behaviors provides insight into the relative acceptance and practice of these behaviors.

A number of questionnaires have been developed in an effort to inventory the beliefs and attitudes of professionals in the field of education. These instruments have approached the concept of teaching with differing results, usually involving the defining a teacher along one or more dimensions. These dimensions usually involved how open, permissive, or liberal the individual was with regard to classroom management or to relating student life experiences to academic knowledge (Bunting, 1981; Jones, Thompson, & Miller, 1980; Sorenson, Husek, & Yu, 1963; Wehling & Charters, 1969). Comparisons between teachers, principals, and others have been made regarding these dimensions (Jandes, Murphy, & Sloan, 1985; Thompson, 1981; Tulloch, 1986). Differences in teacher attitudes have been found to be related to differences with teaching behaviors (Bauch, 1982; Nespor, 1985). Differences in teacher attitudes have been found to influence differences in student learning (Ramsay & Ransley, 1986).

The influence of attitudes on the behaviors of teachers and others in the field of education led to the development of the TBQ. If attitudes are related to teaching behaviors and student achievement, then attitudes toward the research-based effective teaching behaviors could provide insights into the policies and

practices of educators. This paper chronicles the development of the TBQ, identifies characteristics of the final instrument, and presents a discussion of possible uses for the TBQ.

The Development of the Teaching Behaviors Questionnaire

The TBQ was built from statements drawn from the effective teaching research. These statements became the basis for the TBQ's items. A ranking version of the instrument was developed and pilot tested. After some consideration a Likert-type scale format was developed for the final instrument. The TBQ was pilot tested and has been the source of data for two studies (Marchant, 1988; Marchant & Bowers, 1988).

"Teacher Should" Statements

For the TBQ to be valid, the teaching behaviors identified as effective had to be supported by the research. The most appropriate source for research-based effective teaching behaviors was the published results of the effective teaching research. One current summary of the effective teaching research was found in the teacher behavior and student achievement chapter (Brophy & Good, 1986) of the Handbook of Research on Teaching.

This summary served as a guide for the development of "teacher should" statements (cf. Gage, 1978). A thorough

literature review served to further support the statements. The statements were designed to represent general practices indicated by the research as producing greater student achievement. The "teacher should" list was divided into six areas basic to all teaching (see Appendix A for a complete list):

1. Instructional Design and Structure - The teacher should design lessons and structure the classroom in order to increase the students' success rate and time interacting with the information to be learned.
2. Active Teaching - The teacher should be actively interacting and involved with as many students as possible.
3. Giving Information - The teacher presents information to the students in a manner that promotes understanding and retention.
4. Questioning the Students - The teacher should ask questions in a manner that maximizes the involvement and learning of all students.
5. Reacting to Student Responses - The teacher should react to the students' responses in a manner that facilitates involvement and understanding of correct information.
6. Handling Seatwork and Homework Assignments - The teacher should plan worthwhile assignments that the students can understand and successfully complete, and for which the students will be held accountable.

Early Versions

Various formats were considered during the development of the TBQ. One of the earliest format considerations involved using a bipolar response. The format presented a "teacher should" statement followed by four numbers, and then a statement with an opposite meaning. The respondent identified the strength of their preference by choosing a number closest to their preferred choice. However, not all of the research findings were conducive to bipolar extremes, therefore, other formats were considered.

A ranking system was considered as a way of determining preferences for conflicting teaching behaviors. The format used a stem to establish the general area of the statements; four responses were then listed (see Appendix B). Theoretically all of the responses were appropriate for classroom implementation. However, only one of the responses represented a practice supported by effective teaching research. The distractors were developed through interviews with three practicing teachers and two ex-teachers. The respondents had a forced choice of ranking the four responses from 1 to 4 in their order of preference. Although Kerlinger and Kaya (1959) found forced choice slightly "less satisfying than Likert type" measures, both were found to be valid for attitude inventories.

After pilot testing the instrument on five teachers

some revisions were made (mostly in the phrasing and terminology of the statements). In April, 1987 the instrument was administered to 51 teachers and counselors enrolled in a graduate extension course. The 32 item instrument was completed in approximately 20 minutes. Of the 51 teachers: 32 completed the instrument correctly, 2 completed more than 50 percent, 9 completed less than 50 percent (usually just the first page), 5 failed to follow directions and incorrectly completed the instrument (3 checked just their preferred response, 1 ranked each response from 1 to 4, and 1 seemed to number at random), and 3 failed to return the instrument.

The data from the 32 completed instruments were analyzed for internal consistency. The alpha for the instrument was .57. An additional 26 teachers were added to the original sample of 32 and the reliability was found to be .61. With the elimination of the seven items showing the lowest item-total correlations, a final reliability estimate of .69 was found.

A series of ANOVAs using responses from the 58 teacher sample indicated that teachers who described their students' achievement level as definitely below average for their age and grade level scored significantly higher ($p < .05$) on the instrument. This was the only variable found to be significant.

Final version of the TBQ

Due to the difficulty a number of respondents had in completing the instrument and the relatively low reliability, the need for further revisions was considered. A Likert-type scaling system simplified the directions. The new format presented the research supported statement followed by a four response Likert-type scale (see Appendix C). An item with the opposite or a different mutually exclusive behavior was located elsewhere in the instrument. The assignment of values to the responses were reversed for the two items. This format change increased the number of items from 32 to 60 without increasing the amount of time necessary to complete the instrument.

The new format was pilot tested on four graduate classes of teachers during the summer of 1987 (N=60). The percent of usable completed questionnaires increased, as did the reliability. The alpha for 40 items was .78. One of the more interesting results from the series of one-way and two-way ANOVAs conducted on this data was that teachers with less than ten years of experience scored higher ($p < .05$) than those with more than ten years of experience.

A few items were revised, and ten items were deleted for the final version of the instrument. This instrument was used in two comparative studies involving attitudes toward research-based

effective teaching behaviors.

TBQ Sample Results

A few items were rewritten, and ten items were deleted for the final version of the instrument. The study sample consisted of 500 individuals: 300 teachers, 100 principals, 50 college education faculty members, and 50 undergraduate education students. Each individual completed a questionnaire and information sheets. Item-total correlations were calculated and items with low correlations were eliminated in order to establish a more consistent measure. The reliabilities of the groups and the total sample were calculated. The distribution of the data was analyzed to determine normality. Studies utilizing analysis of variance were conducted and found significant differences using the TBQ.

Of the 50 items, 13 were deleted to increase the internal consistency of the instrument. The items were eliminated based on the total sample (N=500) to increase the alpha coefficient (see Table 1). The final alpha for the TBQ was .76.

Insert Table 1

about here

The reliabilities for all of the major sample groups were calculated (see Table 2). The reliability for the student sample was much lower than that for the other groups. Their response pattern to the 37 items was different, and the item-total correlations were different. This difference could have been related to the lack of teaching experience or other factors.

Insert Table 2

about here

The distributions of the total scores on the TBQ were analyzed to determine if they represented a normal distribution. The Kolmogorov-Smirnov one sample non-parametric goodness-of-fit test was used to compare the cumulative distribution of the TBQ scores with a normal distribution (Siegel, 1956). Distributions for the teacher group and the total sample were analyzed (see Table 3).

Insert Table 3

about here

The distribution of TBQ scores from the sample of teachers displayed a significant relationship to a normal distribution. Therefore, the sample met the assumption of

normality (see Figure 1).

Insert Figure 1

about here

The distribution of TBQ scores for the total sample displayed a significant relationship to a normal distribution. Therefore, the total sample met the assumption of normality (see Figure 2).

Insert Figure 1

about here

The scores from these samples were used in two studies involving attitudes toward research-based effective teaching behaviors. The first study dealt exclusively with the elementary and secondary teacher sample (N=300). Marchant and Bowers (1988) found that grade level, school level, years of teaching experience, and gender of the teachers were all significant variables in determining differences among TBQ scores. The second study (Marchant, 1988) found a significant difference among the TBQ scores of elementary principals, secondary principals, elementary teachers, secondary teachers, college education faculty members, and undergraduate education students (N=500).

Discussion

Although the results from the TBQ study sample indicate a possible problem related to the effective teaching research, as an attitude inventory it could be quite useful if the results were viewed with care. The instrument could provide the basis for further research. The TBQ could contribute to program development for new and practicing teachers, and could provide individual teachers with some insight into their own beliefs. With careful consideration the instrument might also become a tool for selection and screening efforts for teachers and principals.

As with most research, there are concerns related to whom the findings generalize. Although much of the research on effective teaching has been duplicated in a number of settings, the results still must be viewed with some caution. The item-total correlates for a number of the TBQ items draw attention to some areas of concern. Although negative and low correlation items may be the result of poor item writing, they may point to problems related to the effective teaching research. Some of the items deleted were those with conflicting research support. For example, support for the use of low cognitive level questions was challenged by a meta-analysis (Redfield & Rouse, 1981). Limiting the use of praise was refuted by more studies than supported it, including a meta-analysis (Lysakowski & Walberg, 1981).

The Teaching Behaviors Questionnaire has produced data which indicates that it could serve as a valuable tool for research. The data for education professionals displayed adequate reliability in the form of internal consistency. The scores from the instrument were normally distributed for a sample of teachers and a sample that included others from the field of education. Studies using scores from the TBQ have yielded significant differences among groups.

These results suggest that continued research using the TBQ might lead to additional insights related to attitudes toward research-based effective teaching behaviors and other variables. Research concerning the relationship of TBQ scores and actual classroom teaching behaviors would be of special interest and importance. This research would validate the use of the TBQ as a predictor of teacher behavior. Research could also be conducted to determine the relationship between TBQ scores of teachers and the achievement of their students. TBQ scores from principals could be compared to those of their teachers, as well as to the achievement of their students. TBQ scores of college education faculty members could be compared to those of their students. Undergraduate education students could be asked to complete the TBQ a various times throughout their training and practice to determine patterns of attitudes.

The Teaching Behaviors Questionnaire could play a role in pre- and post-service teacher training. The TBQ could serve as a tool for reflective teaching. The instrument could provide

education students and teachers with a means to explore their beliefs as it relates to their actions. Therefore providing a tool for "reflection-on-action" in order to better facilitate "reflection-in-action" in the classroom (Schön, 1987).

The TBQ could provide school districts with information that might assist in determining their in-service needs by identifying areas of weakness related to teacher support for specific effective teaching behaviors. Specific items could be analyzed to determine program needs. This could be accomplished for pre- and post service teacher training.

With careful consideration of specific items and some revision, the TBQ might serve as an instrument for selection and screening of teachers and principals. The TBQ could provide some general and specific insights into the perceptions of teacher and principal candidates.

Although the TBQ has limitations, as does the research that served as its basis, it could be a useful tool to educational researchers and practitioners. The TBQ has been shown to produce data suitable for statistical research comparisons, and holds promise as a tool for teacher training. Further use of the TBQ and continued efforts to refine the effective teaching research could lead to a better understanding of the relationship of attitudes to other outcomes, and to improvements in teacher education and teaching.

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Appendix A

The Marchant Teacher Should list.

I. Instructional Design and Structure
   The teacher should design lessons and structure the classroom in order to increase the students' success rate and time interacting with the information to be learned.
   - A. Classroom Management
     1. The teacher should install rules and procedures at the beginning of the year.
     2. The teacher should use more control and structure with low-SES and low-achieving students.
   - B. Pacing
     The teacher should schedule small fast paced steps.
   - C. Practice
     1. The teacher should plan for student practice after each step.
     2. The teacher should use more review, drill, and practice with lower-SES and lower achieving students to emphasize mastery.
     3. The teacher should continue guided practices until a success rate of 80 percent is achieved.
   - D. Role of Teacher
     The teacher should emphasize academic instruction as a major part of the teacher role.
   - E. Success Expectations of Teacher
     The teacher should expect their students to master the curriculum.
   - F. Time-On-Task
     1. The teacher should schedule more time for the most important skills and knowledge, because more time equals more learning.
     2. The teacher should allocate most of the available time to (academic) curriculum-related activities.
     3. The teacher should maximize the student's opportunity to interact with information.

II. Active Teaching
   The teacher should be actively interacting and involved with as many students as possible.
   - A. Classroom Talk
     1. The teacher should talk more than the students.
     2. The teacher should spend most of the time talking about academics, rather than procedural or managerial information.

B. Lecturing
The teacher should spend most of the time asking questions and giving feedback, rather than extended lecturing.

C. Tracking Progress
The teacher should continuously monitor the students' progress.

D. With-it-ness
The teacher should actively monitor the entire classroom.

E. Whole Class Versus Independent Work
The teacher should spend most of the time teaching and supervising the whole class (or small groups on occasion) rather than having the students work independently.

III. Giving Information
The teacher presents information to the students in a manner that promotes understanding and retention.

A. Advance Organizers
The teacher should begin presentations with overviews, outlines, advance organizers, or review of objectives.

B. Calling Attention to Main Ideas
1. The teacher should call attention to main ideas.
2. The teacher should summarize sub-parts of the lesson as it proceeds.
3. The teacher should review the main ideas at the end of the lesson.
4. The teacher should repeat and review general rules and key concepts.

C. Clarity
The teacher should avoid using vague unclear terms.

D. Enthusiasm
The teacher should convey enthusiasm to the class.

E. Length of Presentations
The teacher should present information in brief presentations.

F. Recitation and Application
The teacher should follow presentations with recitation or application opportunities.

IV. Questioning the Students
The teacher should ask questions in a manner that maximizes the involvement and learning of all students.

A. Cognitive Level of Questions
1. The teacher should use more lower-level questions, especially with lower-SES and lower-achieving students.

B. Correct Answers
The teacher should receive correct answers from questions about 75 percent of the time.

C. Participation
1. The teacher should receive a response (not necessarily correct even "I don't know") from the student asked before asking another question or student.
2. The teacher in early grades should make sure that all of the students participate overtly (and roughly equally) through "patterned turns" and calling on volunteers and non-volunteers.

D. Summarizing
The teacher should have the students summarize the main points in their own words.

E. Wait Time
The teacher should wait about 3 seconds or more after asking a question before calling on a student.

V. Reacting to Student Responses
The teacher should react to the students' responses in a manner that facilitates involvement and understanding of correct information.

A. Acknowledgement
The teacher should overtly acknowledge correct responses (about 90 percent of the time).

B. Criticism
The teacher should use negative feedback in the form of simple negation rather than personal criticism when an incorrect answer is given.

C. Incorrect Answers
1. The teacher should, when possible, rephrase the question or provide clues after an incorrect answer is given.
2. The teacher should affirm the correct part of a partly correct answer, and then give clues or rephrase the question before giving the answer or calling on another student.
3. The teacher should provide a review, summary. or an extended explanation to an incorrect answer when members of the class do not understand the point.

D. Praise
1. The teacher should use praise sparingly.
2. The teacher should use specific praise.
3. The teacher should use more encouragement and praise with lower-SES and lower-

achieving students.

E. Use of Student Responses

The teacher should answer relevant student questions or redirect them to the class, and incorporate relevant student comments into the lesson.

VI. Handling Seatwork and Homework Assignments

The teacher should plan worthwhile assignments that the students can understand and successfully complete, and for which the students will be held accountable.

A. Accountability for Assignments

The teacher should inform the students as to what they are accountable for, how to get help, and what to do when they finish.

B. Assignment Preparation

The teacher should explain the work and go over practice examples before the students work independently.

C. Difficulty of Assignments

1. The teacher should assign seatwork and homework that is challenging enough to constitute meaningful learning experiences and yet easy enough to allow success with reasonable effort.
2. The teacher should receive seatwork with 90 to 100 percent correct by most of the students.

D. Poor Performance

The teacher should provide reteaching and follow-up assignments when performance is poor.

Appendix B

Sample items from the Teaching Behaviors Questionnaire (ranking version)

1. With respect to classroom rules and procedures, the teacher should:
   ____ gradually emphasize them one-at-a-time throughout the year
   ____ teach them all at the beginning of the school year
   ____ introduce them as they become necessary
   ____ ask the students to generate rules when problems develop

6. With regard to mastery of the course content, the teacher should expect:
   ____ less than half of the students to master the curriculum
   ____ about half of the students to master the curriculum
   ____ about three-fourths of the students to master the curriculum
   ____ all of the students to master the curriculum

17. When teachers ask questions in class, students should usually be required to:
   ____ apply new information or knowledge
   ____ give new factual information or knowledge
   ____ evaluate new information or knowledge
   ____ synthesize new information or knowledge

20. After asking a question in class, the teacher should most frequently call on students that are:
   ____ volunteering and likely to answer correctly
   ____ not volunteering but likely to answer correctly
   ____ volunteering but likely to answer incorrectly
   ____ either volunteering or not volunteering but likely to answer correctly

26. The teacher should use praise:
   ____ whenever possible
   ____ whenever a correct answer is given
   ____ sparingly
   ____ seldom, if ever

30. The teacher should assign seatwork and homework that:
   ____ is somewhat challenging
   ____ requires guidance by the teacher or a parent
   ____ keeps the students busy for about an hour
   ____ is the same as what has been worked on before

Appendix C

Sample items from the Teaching Behaviors Questionnaire (final version)

3. The teacher should ususally ask questions in class that require the students to synthesize or evaluate information. - - - SD - D - A - SA

9. The teacher should sit at the teacher's desk while the students are doing seat work, and have the students come to the desk when they need help. - - - - - - - - - SD - D - A - SA

12. The teacher should expect all of the students to master the course content. - SD - D - A - SA

21. The teacher should wait at least 3 seconds after asking a question in class before calling on a student. - - - - - - - SD - D - A - SA

26. The teacher should only call on volunteering students after asking a question in class. - - - - - - - - - - - - SD - D - A - SA

27. The teacher should move around the classroom during the time that the students are working independently at their seats. - - - - - - - - - - - - - - - - SD - D - A - SA

36. The teacher should expect the students to figure out instructions as part of an assignment. - - - - - - - - - - - - - - - SD - D - A - SA

39. The teacher should use praise sparingly in the classroom. - - - - - - - - - - - - - - SD - D - A - SA

47. The teacher should spend time at the beginning of the school year teaching classroom rules and procedures. - - - - - SD - D - A - SA

49. The teacher should begin lessons and presentations to the class with a review or an overview of the material. - SD - D - A - SA

Authors Notes

The "Teachers Should" list and the Teaching Behaviors Questionnaire are under copyright (c) 1988 with all rights reserved. For further information please contact:

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Table 1

Steps in item deletion and resulting alphas

Total Deleted	Item Deleted	Alpha
0	0 (All 50 items)	.67
2	39. (praise) 43. (SES)	.70
3	46. (75% correct answers)	.71
5	3. (questions) 40. (talk)	.72
6	45. (indicate wrong answer)	.73
8	8. (group) 19. (emotion)	.75
9	24. (quickly question)	.75
11	15. (discussion) 23. (work)	.76
12	37. (repeat question)	.76
13	28. (asking questions)	.76
13	Final Instrument	.76

Note. N = 500, ( ) = subject of item.

Table 2

Reliabilities of sample groups

Group	N	Alpha
Elementary Teachers	177	.75
Secondary Teachers	123	.77
Elementary Principals	58	.73
Secondary Principals	42	.74
College Ed. Faculty	50	.78
Undergraduate Students	50	.62
Total	500	.76

Table 3

Kolmogorov-Smirnov goodness-of-fit test for normal distribution of TBQ scores from teacher sample and total sample

		Most Extreme Differences			
Group	N	Absolute	Positive	Negative	K-S Z
Teachers	300	0.0792	0.0792	-0.0306	1.37 *
Total	500	0.0635	0.0635	-0.0318	1.42 *

Note. * $p < .05$.

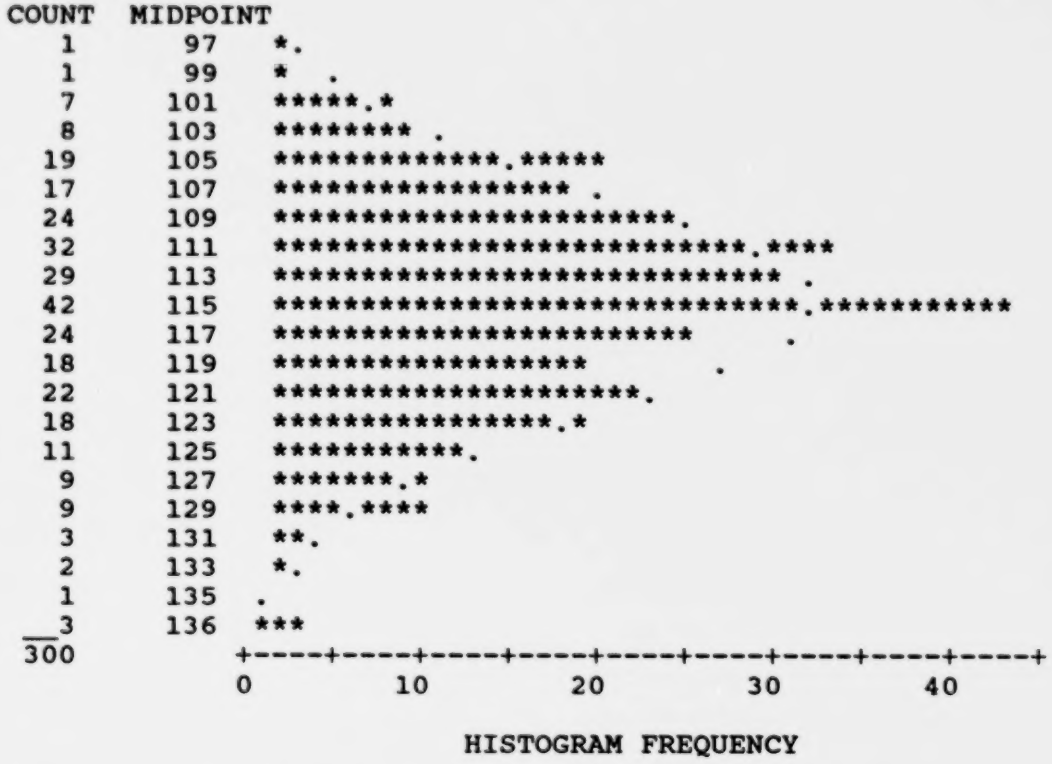

Figure 1. TBQ distribution for teacher sample. One asterisk equals approximately one occurrence. Dots represent normal distribution of scores.

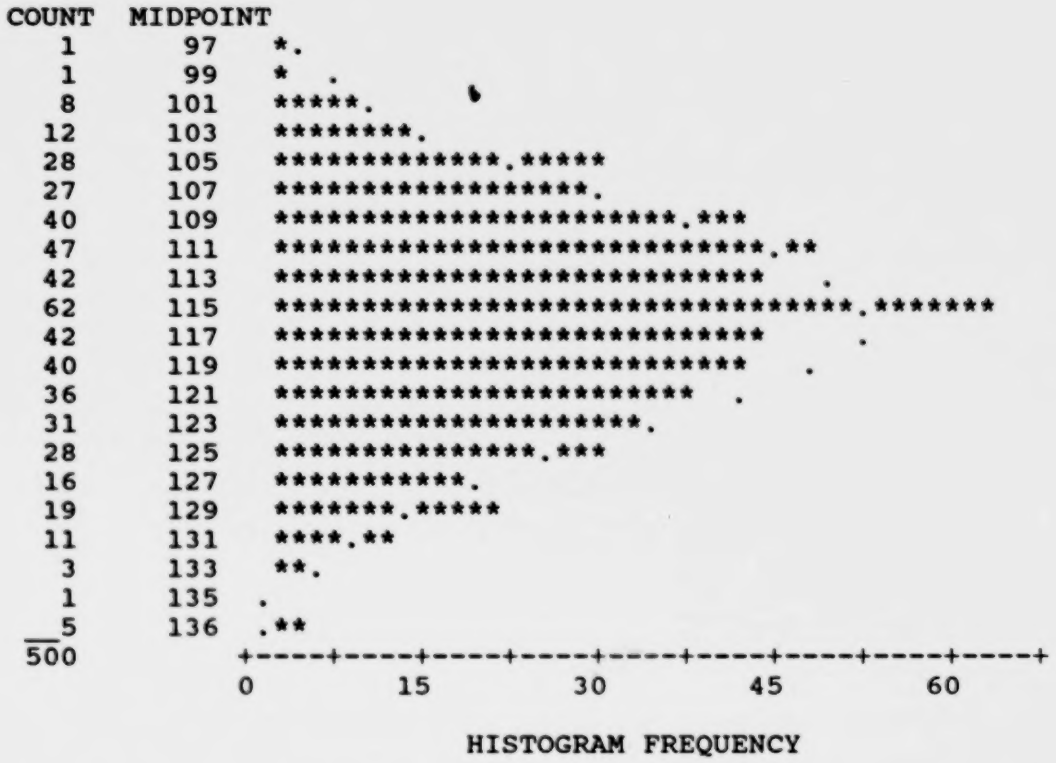

Figure 2. TBQ distribution for total sample. One asterisk equals approximately 1.5 occurrences. Dots represent normal distribution of scores.